OPTIONS PRE-TRADE AND POST-TRADE RISK CONTROLS

NYSE Amex Options | Arca Options

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OPTIONS PRE-TRADE AND POST-TRADE RISK CONTROLS

OVERVIEW

This document describes the risk controls (both pre-trade and activity-based) available to NYSE Amex Options and NYSE Arca Options participants. Future enhancements may be subject to effectiveness of rule filings, and operation of current mandatory risk controls is governed by NYSE Amex and NYSE Arca Options rules. This document is provided as a summary for reference purposes only and may not be comprehensive or authoritative. For specific details regarding the functioning of any NYSE Amex or NYSE Arca Options risk control mechanism, please refer to Exchange rules or contact an NYSE representative.

PRE-TRADE REJECT TRIGGERS

PRICE VALIDATION

(NYSE Amex Options Rules 967NY/967.1NY/980NY, NYSE Arca Rules 6.60/6.61/6.91)

NYSE Amex Options and NYSE Arca Options apply "too-executable" checks for inbound single-leg and complex limit orders and for Market Maker quotes to prevent potentially erroneous executions. Inbound orders with limits priced too far through the contra-side National Best Bid and Offer ("NBBO") are rejected. This functionality is available during pre-open and core trading for single-leg and complex orders.

"Too executable" price checks for orders operating prior to the market open will use the best bids and offers available from Exchange Market Makers or away market Best Bid and Offer ("BBO") as reference prices immediately prior to conducting a Trading Auction.

"Too executable" price checks for inbound Market Maker quotes will reject the inbound quote and cancel the preceding same side quote in the affected series, if the inbound quote is priced too far through the contra-side NBBO. This functionality only operates during core trading hours; however, the Arbitrage Check referenced below will serve as a risk control for Market Maker Quotes in the absence of NBBO data, including pre-open.

NBBO "too-executable" filter:

Inbound outright orders and Market Maker quotes will be rejected in the following circumstances:

- Buy orders when the National Best Offer ("NBO") is $1 or less and the price of the option order (quote) is at least 100% through the NBO
- Market Maker quote bids when the NBO is $1 or less and the price of the market maker quote bid is at least $1.00 through the NBO
- Buy orders and Market Maker quote bids when the NBO is over $1 and the bid price of the option order or market maker quote is at least 50% through the NBO
- Sell orders and Market Maker quote offers when the National Best Bid ("NBB") is over $1 and the offer price of the option order or market maker quote is at least 50% through the NBB

Sell orders and Market Maker quote offers when the NBB is $1 or less are not currently subject to the filter because single-leg limit orders or Market Maker quotes with zero or negative prices are rejected in all circumstances.

“Too-executable” filter for complex orders:

Inbound complex orders are rejected if they are more than a given number of ticks (in terms of the tick size of the leg with the smallest dollar value i.e., price times quantity) through the contra-side NBBO implied by the leg markets:

- For complex strategies where the MPV of the leg with the smallest dollar value is $0.01, the Exchange will reject orders priced more than 10 ticks ($0.10) through the derived NBBO
- For complex strategies where the MPV of the leg with the smallest dollar value is $0.05, the Exchange will reject orders priced more than 3 ticks ($0.15) through the derived NBBO
- For complex strategies where the MPV of the leg with the smallest dollar value is $0.10, the Exchange will reject orders priced more than 3 ticks ($0.30) through the derived NBBO

The Exchange also has an additional “too executable” Arbitrage Check for Market Maker quotes. This operates prior to the market open and during core trading as a backup to the NBBO check, when a valid NBBO is not available. This additional price protection filter will reject any call bid greater than or equal to the underlying last sale price, and any put bid greater than or equal to the strike price. The Arbitrage Check will not apply to options which do not have last sale price data, including underlyings with non-standard deliverables, OTCs, indexes and ByRDs.

LIMIT UP/LIMIT DOWN PROTECTIONS (NYSE Amex Options Rule 953.1NY, NYSE Arca Rule 6.65A)

When the equities market for a given underlying symbol enters either a Limit Up/Limit Down “Limit State” or “Straddle State,” the following order protection rules will apply on NYSE Amex Options and NYSE Arca Options:

- Inbound Market orders will be rejected
- Market orders in the process of being handled (held at a collar price, routed orders coming back from an unsuccessful route, or posted portions of partially routed-out orders) will be canceled
- Stop Market orders will not elect (Stop Limit orders are unaffected)

Immediately upon the conclusion of the Limit or Straddle State:

- Market orders will once again be accepted
- Stop Market orders will be re-evaluated for election and execution based on the first market update following the end of the Limit or Straddle state

SELF-TRADE PREVENTION FOR MARKET MAKERS (NYSE Amex Options Rule 964NY, NYSE Arca Rule 6.76A)

The Self-Trade Prevention mechanism enables Market Makers to prevent unintended executions in which each side originated from the same trader. The mechanism only applies to Market Makers, and is limited to PNP Order types (PNP, PNPB, PNPLO, and PNP IOC) sent via ArcaDirect. Self-trades are identified at the level of Market Maker ID. Complex orders are excluded.

On an automatic, global basis, this mechanism cancels the older of two orders that would trade with each other (quotes that would trade with each other, of course, are always canceled per standard quote processing). A cancel message is sent to the participant with a reason code of “Self-Trade Prevention”.

Self-trade prevention for orders interacting with quotes will be implemented in a future release.

INTRADAY CLEARING PERMISSION REVOCATION

Market Makers and Floor Brokers are required to have a Letter of Guarantee or Letter of Authorization with the Exchanges as follows:

- A Market Maker must submit a Letter of Guarantee from a Clearing Member that has agreed to accept financial responsibility for all transactions made by that Market Maker in order to make any transaction on the floor of the Exchange
- A Floor Broker must submit a Letter of Authorization from a Clearing Member that has agreed to accept financial responsibility for all transactions made by that Floor Broker in order to make any transaction on the floor of the Exchange

Any written notice of revocation of a Letter of Guarantee or a Letter of Authorization is effective immediately upon processing by NYSE Amex Options and NYSE Arca Options. This protects participants from scenarios in which Market Makers or Floor Brokers could be active on the Exchange without the necessary financial guarantees.

TRADING PARAMETER PROTECTIONS

OPENING AUCTION PRICE PROTECTION PARAMETERS

(NYSE Amex Options Rule 952NY, NYSE Arca Rule 6.64)

When an option series has buy and sell interest at locked or crossed prices before the open, an opening auction is required to commence core trading in order to ensure a fair and orderly market in the series. A "legal width" Market Maker quote, NBBO or combination of the two, is required to open the series. For purposes of this requirement, a "legal width" market is defined as the following:

- No more than $0.25 wide when the best bid is less than $2.00
- No more than $0.40 wide when the best bid is $2.00 or more but does not exceed $5.00
- No more than $0.50 wide when the best bid is more than $5.00 but does not exceed $10.00
- No more than $0.80 wide when the best bid is more than $10.00 but does not exceed $20.00
- No more than $1.00 wide when the best bid is greater than $20.00

Any series requiring an opening auction will not open until such a "legal width" market has been established.

The matching engine will find a price at or within this market where the most contracts can trade, then conduct a one-price "Dutch" auction to open the series. Depending on market conditions at the conclusion of the auction, any remaining imbalance following the auction will either post to the book, route out, execute, or be held at a price protection collar (see "Collar Protections," below).

The Complex Order Book supports a one-price opening auction. Once all series associated with a complex strategy have opened, Complex opening auctions will occur in any complex strategy in which orders on opposing sides of the book are locked or crossed. In the event that an opening auction is required, the implied NBBO will be used as the auction boundary, and no interaction with the leg markets or contingent order types will be included in the opening trade.

Closing auctions are not supported on NYSE Amex Options and NYSE Arca Options.

COLLAR PROTECTIONS

(NYSE Amex Options Rule 967NY, NYSE Arca Rule 6.60)

Collar protections ("collar logic") provide price protection for Market orders and super-marketable limit orders. This functionality helps prevent scenarios in which aggressive orders immediately trade up or down to an extreme price.

The collar logic only allows orders to advance one exchange-configurable trading collar increment per second until filled or canceled. This provides the marketplace with time to refresh liquidity prior to advancing the buy or sell imbalance to the next, more aggressive price increment.

Collar increments for incoming buy orders are based on the NBBO bid, and collar increments for incoming sell orders are based on the NBBO offer. Standard collar increments are defined as the following:

- $0.25, when the best bid (offer) is less than $2.00
- $0.40, when the best bid (offer) is $2.00 or greater, but does not exceed $5.00
- $0.50, when the best bid (offer) is $5.01 or greater, but does not exceed $10.00
- $0.80, when the best bid (offer) is $10.01 or greater, but does not exceed $20.00
- $1.00, when the best bid (offer) is $20.01 or greater

The Exchange has the ability to set parameters at a scaled percentage of the above increments. **Currently, the collar logic parameters are set at 40% of the above.**

For **Market orders** to buy (sell), the inbound order will be collared at the displayed bid (offer) plus one collar increment if the market is wider than the collar. Once posted, the Market order will "look" up one additional collar for execution opportunities, and continue to follow applicable collar logic. This applies to all cases in which the market is wide upon order arrival or becomes wide due to an initial execution, including in the case of an opening auction imbalance.

For **Limit orders**, collar logic only applies if the market is wider than the collar and the Limit order is priced through the contra side but passes too-executable filters (see "Price Validation" section). In such a scenario, Limit orders will trade against the contra-side posted interest, then post at that price. Once posted, the Limit order will act identically to a collared Market order (above), up to its limit price.

If both BBO and NBBO markets are not available, inbound Market orders will always be rejected, even if there is a valid Last Sale price. Participants will receive a reject message stating, “No market for market order”.

ROUTING LOGIC PROTECTIONS
(NYSE Amex Options Rule 964NY, NYSE Arca Rule 6.76A)

NYSE Amex Options and NYSE Arca Options apply routing logic protection to ensure the fair and efficient execution of routable orders. The following protection mechanisms apply to routed orders:

- Collar logic applies to routed orders (see “Collar Protections,” above)
- Route imbalances will be held at the least aggressive route price when sweeping away BBOs at multiple prices
- Updates to away BBOs must be within premium-based collar logic parameters in order to trigger additional routing
- If the contra-side away BBO refreshes while a posted order is being held at a collar, and the away BBO is at a better price or within the collar price, the Market order will immediately route out as an ISO order, with a limit price equal to the displayed price, for the displayed amount
- If multiple exchanges refresh and are within the collar, multiple ISOs will be sent and the Market order will check for further trading opportunities in the next collar increment based on the least aggressive route price.
- NYSE Amex Options and NYSE Arca Options restrict situations in which the Exchange routes out to a single quote multiple times. This protects clients from possible delays in execution due to unresponsive market centers, and helps avoid scenarios in which it could appear as though the Exchange is duplicating routes.

CANCELS AND TAKEDOWNS

CANCEL ON DISCONNECT

“Cancel on Disconnect” functionality allows participants to automate the cancelation of all open orders and/or quotes for a given client session when the connection to the matching engine is lost.

This functionality is currently optional for orders sent via FIX, and automatic for orders sent via ArcaDirect and for all Market Maker quotes.

QUOTE TAKEDOWNS

Quote takedown functionality provides Market Makers with several methods to remove their quotes from the market. Market Makers on NYSE Amex Options and NYSE Arca Options have the ability to send quote takedown requests at one of several levels of granularity:

- Series – Cancel quotes on an individual series
- Group ID – Cancel quotes on a predefined group of series within a given underlying symbol
- Symbol – Cancel quotes on all series on a given underlying symbol
- User – Cancel quotes for an entire session

Note that to minimize latency and matching engine load, quoting best practices call for using the most granular quote takedown level appropriate in a given situation. For example, to cancel all quotes for a given underlying symbol, a symbol-level quote takedown should be used. To submit either a large number of series-level takedowns which the system must process separately, or a broad user-level takedown which would unnecessarily cancel quotes in unrelated classes, would result in inferior performance.

Following a quote takedown, Market Makers must send a re-enable message via the API prior to sending in additional quotes.

NYSE Amex Options and NYSE Arca Options offer Dedicated Takedown Connections to minimize latency for quote takedowns via Market Maker Direct. This functionality is reserved exclusively for Symbol-level and User-level takedowns. In order to use Dedicated Takedown Connections, clients must first test the functionality in our Enhanced CERT environment.

BULK CANCEL

“Bulk Cancel” functionality allows participants to send a message canceling all open orders by trading permit and connection ID. Bulk Cancel functionality is available for Market Maker Quotes, UGW Binary Gateway users, FIX Gateway users and via CMT. Bulk Cancel requests may be made by TPID.

ACTIVITY-BASED RISK MITIGATION

SYMBOL-LEVEL RISK MITIGATION
(NYSE Amex Options Rule 928NY, NYSE Arca Rule 6.40)

Activity-based risk mitigation cancels all applicable orders or quotes for participants who exceed various activity thresholds. NYSE Amex and Arca Options offer several varieties of activity-based risk protections.

Symbol-level activity-based risk mitigation is available for Market Maker quotes and all single-leg and complex orders. Symbol-level risk mitigation aggregates user-specified risk events for a given underlying symbol over consecutive 100-millisecond periods. Use of this mechanism is mandatory for Market Maker quotes. Once a Market Maker activates symbol-level activity based risk mitigation for its quotes in an appointed class, the mechanism and the settings established will remain active unless, and until, the Market Maker changes the settings. Risk Mitigation is optional for Order Sending Firms. To be effective, an Order Sending Firm must activate the mechanism, and corresponding settings, for orders in a specified class. Once the mechanism is activated for orders in a specified class, the mechanism and the settings established will remain active unless, and until, the Order Sending Firm deactivates the mechanism or changes the settings. Market Makers and Order Sending Firms can, at any time, choose from the following aggregation methods and specify tolerances within the ranges noted below: *

- **Number of Transactions** (client can specify tolerance within range of 3 to 2,000 trades)
- **Contract Volume** (client can specify tolerance within range of 20 to 500,000 contracts)
- **Percent of Order/Quote** (client can specify tolerance within range of 100% to 200,000% of order/quote size)

**The Exchange may establish default settings that are more restrictive than the outside limits set forth herein. Any changes to the default settings would be announced via Trader Update*

Example. If a Market Maker Direct user chooses to activate Percent of Quote Risk Mitigation with the threshold set at 300%, the following scenarios will result in a breach, causing a disable and removal of all quotes for the affected symbol:

1. 100% of 3 quotes trade within 100 milliseconds, total = 300%
2. 50% of each of 6 quotes trade within 100 milliseconds, total = 300%
3. 100% of one quote, 50% of 2 other quotes, and 20% of 5 additional quotes within 100 milliseconds, total = 300%

Note: Each quote can be a different size. For instance, in Scenario 1, Quote #1 = 100 contracts; Quote #2 = 20 contracts; Quote #3 = 50 contracts. The mechanism only looks at the percent of each quote that is filled and aggregates those percentages to reach the threshold.

When Symbol-level activity-based risk mitigation is triggered in a given symbol, all orders (quotes) in that underlying symbol are cancelled for the impacted TPID. All new orders (quotes) will be rejected. The impacted firm must re-enable their settings using CMT or the gateways to re-enter orders (quotes) in that underlying symbol.

Please note the following:

- The 100-millisecond timer is maintained internally by the matching engine and measures activity within fixed, non-overlapping 100-millisecond periods. Clients will not know when the timer has elapsed and restarted. As a result, clients who, for example, set a "Number of Transactions" risk threshold setting of 5 trades per 100 milliseconds can theoretically execute up to 9 (generally, 2n – 1) transactions within a 100-millisecond window before triggering Risk Mitigation (by, for instance, executing 4 trades at the end of one 100-millisecond window, and 5 trades at the beginning of the next one).

- Quote-based risk mitigation and order-based risk mitigation are separate mechanisms; risk is not aggregated across quotes and orders. Users of both Market Maker quotes and orders may select the same or different types of risk mitigation thresholds for their quotes and orders

GLOBAL RISK MITIGATION
(NYSE Amex Options Rule 928NY, NYSE Arca Rule 6.40)

Global Risk Mitigation cancels all open applicable single-leg and complex orders by TPID (or all market maker quotes by MMID) across all symbols when a given number of symbol-level triggers are activated within a given period of time. When this occurs, by design, manual intervention is required to re-enable the user on a global basis. For this reason, Global Risk Mitigation is meant to provide protection against catastrophic system problems; it is not intended as a day-to-day risk management tool. In addition, as it is administered by an external server, Global Risk Mitigation lacks the completely deterministic nature of Symbol Level Risk Mitigation. Thus, in the process of Global Risk Mitigation being triggered, race conditions may result in the possibility of additional executions beyond those that triggered the risk event in symbols for which Symbol-Level Risk Mitigation has not already been applied.

The threshold for risk tolerance at the global level can be set by the user within an Exchange-defined range. Currently, the Exchange-defined range is 25 to 100 symbol-level risk triggers per 100 milliseconds. (The default setting for a firm which does not otherwise specify a threshold is 25.)

If Global Risk Mitigation is triggered, an authorized representative from the impacted firm will be required to make non-automated contact (i.e., not solely an email) with the Trade Desk in order to re-enable trading on a global level. (Firms that have not designated an authorized representative must contact the Trade Desk at tradingox@nyse.com to do so.) Once global re-enable has been manually set, the firm must send symbol level re-enable messages via the appropriate API.

OPTIONAL CONNECTIVITY CONTROLS

FIX GATEWAY RISK CONTROLS

FIX Gateway Risk Controls provide FIX clients with the option of utilizing user-configurable settings to prevent trading errors. The controls allow an authorized user to set parameters before the trading day starts and reset parameters intraday as needed by contacting Connectivity at (888) 896-2830 2, 1 or connectivity@nyse.com.

Pre-Trade Gateway Risk Controls:

- Maximum Notional Value per order (order size × price × 100)
- Maximum number of contracts per order

Post-Trade Gateway Risk Controls:

- Aggregate Notional Value of contracts bought or sold by symbol
  - For each underlying symbol, Notional Value is tracked separately under two subcategories:
    - The aggregate Notional Value of Synthetic Long Positions (Long Calls and Short Puts by underlying)
    - The aggregate Notional Value of Synthetic Short Positions (Long Puts and Short Calls by underlying)
- Maximum Notional Value traded by session
  - Total number of contracts × 100 × price traded on the day
- Maximum contracts traded by session per day
- Contracts bought or sold by symbol

When a Post-Trade Risk Control threshold which is measured on a symbol level is breached, the Exchange will cancel a participant's resting orders in that symbol and reject all subsequent orders in that symbol for the remainder of the session. When a Post-Trade Risk Control threshold which is measured on a session level is breached, a participant will be removed from the market for the remainder of the day at the session level. All open orders will cancel and no new orders will be allowed. If a Post-Trade Risk Control breach occurs, a participant can re-enable intraday by contacting Connectivity.

Participants can elect to receive email alerts from connectivity that serve as an additional notification of a threshold breach. These email alerts are sent to those participants responsible for opening the affected session.

Risk Management on the Risk Management Gateway is universal; when enabling the Gateway Risk Controls, all above-mentioned settings must be configured.